

# PATENT ABSTRACTS OF JAPAN

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## (54) MEMBRANE SEPARATOR BY HOLLOW TUBULAR MEMBRANES

(57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a membrane separator by hollow tubular membranes in which an air lift circulating flow is generated while the bundle of hollow tubular membranes is filled into the whole inside of a module and which is effective and is of air lift circulating type having large membrane filling area.

**SOLUTION:** This separator comprises a module outer cylinder 10 concentrically having a lower cylindrical part 11 of small diameter and a gas-liquid separation cylindrical part 12 of large diameter at the lower half part and the upper half part thereof and equipped with an annular water collecting seat 13 positioned above the lower cylindrical part and installed inside the gas-liquid separation cylindrical part, and a membrane element 20 having a potting part 21 fitted in the annular water collecting seat 13 and fixed, a partition 22 fixed to the potting part at the upper end thereof and hung down into the lower part of the inside of the lower cylindrical part and dividing the inside of the lower cylindrical part into two flow passages (a), (b), and a lot of external pressure type hollow tubular membranes 23 fixed to the potting part at the upper end thereof and opened to the upper surface of the potting part at the hollow upper end thereof and hung down into the two flow passages separated by the partition.

